Commonwealth of Massachusetts
Executive Office of Energy & Environmental Affairs

Department of Environmental Protection
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Date Stamped Nov. 9, 2012

Mr. Tim Henry
Ipswich Municipal Light Department
276 High Street
Ipswich, MA 01938

RE: **IPSWICH**
Metropolitan Boston/Northeast Region
310 CMR 7.19 – NO_X RACT
Emission Control Plan
Application No. MBR-11-ECP-001
Transmittal No. X241571
APPROVAL

Dear Mr. Henry:

The Metropolitan Boston/Northeast Region (NERO) of The Department of Environmental Protection ("MassDEP"), Bureau of Waste Prevention, has reviewed your Oxides of Nitrogen (NO_X) Emission Control Plan (ECP) submittal. The ECP was submitted to detail how Reasonably Available Control Technology (RACT) would be implemented for existing stationary reciprocating internal combustion engines (RICE) at Ipswich Municipal Light Department (Ipswich) located at 276 High Street in Ipswich, Massachusetts. Said RICE at Ipswich are subject to 310 CMR 7.19(8) "Reasonably Available Control Technology for Sources of Oxides of Nitrogen: Stationary Internal Combustion Engines."

A. BACKGROUND

On June 1, 1994, MassDEP commenced review of the 310 CMR 7.19 NO_X RACT ECP filed by Ipswich, Application No. MBR-94-COM-040, which included the following operational RICE, identified now as Emission Unit (EU) Nos.: EU1, EU2, EU3, EU4, EU6, EU7, EU8, EU9, EU10, EU11, and EU12. In said Application, Ipswich had proposed to achieve compliance with NO_X RACT utilizing a variety of NO_X RACT compliance strategies, including those pursuant to: 310 CMR 7.19(8)(c) for engines that had operated 1,000 hours or more during any consecutive twelve month period since January 1,1990; 310 CMR 7.19(8)(d) for engines that had not operated 1,000 hours or more during any consecutive twelve month period since January 1, 1990; and 310 CMR 7.19(2)(f) via Seasonal Fuel Switching for three units in lieu of complying with emissions limitations contained at 310 CMR 7.19(8). On May 31, 1995, MassDEP issued Approval No. MBR-94-COM-040, approving the above RACT compliance strategies.

On October 26, 2011 MassDEP issued Notice of Noncompliance (NON) No. NON-NE-11-7005 to Ipswich for failing to comply with the Seasonal Fuel Switching requirements contained

in NO_X RACT ECP Approval No. MBR-94-COM-040. Said NON required that Ipswich submit a completed, revised ECP Application to MassDEP.

In response Ipswich submitted a revised NO_X RACT ECP, Application No. MBR-11-ECP-001, to MassDEP. Since Ipswich's operations have changed since issuance of Approval No. MBR-94-COM-040 in 1995, Ipswich proposed, via this revised NO_X RACT ECP Application No. MBR-11-ECP-001, to modify the NO_X RACT compliance strategy contained in Approval No. MBR-94-COM-040. Ipswich has proposed in Application No. MBR-11-ECP-001 to comply with 310 CMR 7.19(8) NO_X RACT by incorporating a combination of compliance strategies including those allowed per 310 CMR 7.19(8)(c), per 310 CMR 7.19(8)(d), and via the use of NO_X Emission Reduction Credits (ERCs) per 310 CMR 7.19(2)(g), which are certified by MassDEP pursuant to 310 CMR 7.00: Appendix B(3) and as calculated according to Section H below.

B. LEGAL AUTHORITY

This NO_X RACT ECP Application, No. MBR-11-ECP-001, was submitted in accordance with Regulation 310 CMR 7.19, RACT for sources of NO_X, as contained in 310 CMR 7.00 "Air Pollution Control Regulations" adopted by MassDEP pursuant to the Massachusetts General Laws, Chapter 111, Section 142 A-E, Sections 4 and 6.

The NO_X RACT Regulation 310 CMR 7.19(8) requires any person who owns, leases, operates or controls a stationary reciprocating internal combustion engine having energy input capacity of three million British thermal units per hour or greater to submit an ECP, and to have the ECP approved by MassDEP under 310 CMR 7.19(3).

C. DESCRIPTION OF AFFECTED UNITS

A summary and description of the emission units at Ipswich is contained in Table 1 below:

TABLE 1

EU #	ALLOWABLE FUEL(S)	DESCRIPTION OF EMISSION UNIT	EU DESIGN CAPACITY in MMBtu/hr	COMMENTS
EU1	ULSD Diesel mode[1]	Fairbanks-Morse stationary reciprocating internal combustion engine Model No. 38 TDD 8 1/8 (6 CYLINDER, TURBOCHARGED)	13.4	Has operated <1000 hours during any consecutive twelve (12) month period since January 1, 1990
	Dual Fuel mode[2]			

TABLE 1				
EU #	ALLOWABLE FUEL(S)	DESCRIPTION OF EMISSION UNIT	EU DESIGN CAPACITY in MMBtu/hr	COMMENTS
EU2	ULSD Diesel mode[1]	Fairbanks-Morse stationary reciprocating internal combustion engine Model No. 38 DD 8 1/8 (12 CYLINDER)	14.416	Has not demonstrated, via emissions compliance stack testing, compliance with the applicable NO_X emission standard of 9.0 grams per brake horsepower hour when operating in Diesel mode
	Dual Fuel mode[2]			Has demonstrated, via emissions compliance stack testing, compliance with the applicable NO_X emission standard of 9.0 grams per brake horsepower hour when operating in Dual Fuel mode
EU3	ULSD Diesel mode[1]	Fairbanks-Morse stationary reciprocating internal combustion engine Model No. 33-16/20 (6 CYLINDER)	9.138	Has not been operational for at least 24 hours in each of the last two calendar years, therefore Ipswich shall be required to obtain a new Plan Approval via 310 CMR 7.02 prior to commencing operation
EU4	ULSD Diesel mode[1]	Fairbanks-Morse stationary reciprocating internal combustion engine Model No. 33-16/20 (5 CYLINDER)	7.5	Has not been operational for at least 24 hours in each of the last two calendar years, therefore Ipswich shall be required to obtain a new Plan Approval via 310 CMR 7.02 prior to commencing operation
EU6	ULSD Diesel mode[1]	Fairbanks-Morse stationary reciprocating internal combustion engine Model No. 38 DD 8 1/8 (10 CYLINDER)	12.084	Has demonstrated, via emissions compliance stack testing, compliance with the applicable NO_X emission standard of 9.0 grams per brake horsepower hour when operating in Diesel mode and in Dual Fuel mode
	Dual Fuel mode[2]			
EU7	ULSD Diesel mode[1]	Fairbanks-Morse stationary reciprocating internal combustion engine Model No. 38 D 8 1/8 (12 CYLINDER)	14.416	Has operated <1000 hours during any consecutive twelve (12) month period since January 1, 1990
EU8	ULSD Diesel mode[1]	Cooper Bessemer stationary reciprocating internal combustion engine Model No. GSB 8 (16 CYLINDER)	12.084	Has operated <1000 hours during any consecutive twelve (12) month period since January 1, 1990

TABLE 1				
EU #	ALLOWABLE FUEL(S)	DESCRIPTION OF EMISSION UNIT	EU DESIGN CAPACITY in MMBtu/hr	COMMENTS
EU9	ULSD Diesel mode[1]	Fairbanks-Morse stationary reciprocating internal combustion engine Model No. 38 DD 8 1/8 (12 CYLINDER)	14.416	Has not demonstrated, via emissions compliance stack testing, compliance with the applicable NO_X emission standard of 9.0 grams per brake horsepower hour when operating in Diesel mode
	Dual Fuel mode[2]			Has demonstrated, via emissions compliance stack testing, compliance with the applicable NO_X emission standard of 9.0 grams per brake horsepower hour when operating in Dual Fuel mode
EU10	ULSD Diesel mode[1]	Fairbanks-Morse stationary reciprocating internal combustion engine Model No. 38 TDD 8 1/8 (6 CYLINDER, TURBOCHARGED)	13.4	Has operated <1000 hours during any consecutive twelve (12) month period since January 1, 1990
	Dual Fuel mode[2]			
EU11	ULSD Diesel mode[1]	Fairbanks-Morse stationary reciprocating internal combustion engine Model No. 38 TDD 8 1/8 (6 CYLINDER, TURBOCHARGED)	13.4	Has demonstrated, via emissions compliance stack testing, compliance with the applicable NO_X emission standard of 9.0 grams per brake horsepower hour when operating in Diesel mode and Dual Fuel mode
	Dual Fuel mode[2]			
EU12	ULSD Diesel mode[1]	Fairbanks-Morse stationary reciprocating internal combustion engine Model No. 38 TDD 8 1/8 (6 CYLINDER, TURBOCHARGED)	13.4	Has demonstrated, via emissions compliance stack testing, compliance with the applicable NO_X emission standard of 9.0 grams per brake horsepower hour when operating in Diesel mode and in Dual Fuel mode
	Dual Fuel mode[2]			

NOTES:

1: ULSD Diesel mode: consisting of 100 percent ultra low sulfur distillate (ULSD) fuel firing, having a sulfur content of no more than 0.0015% by weight

2: Dual fuel mode: consisting of a mixture of natural gas together with a maximum of 6 percent by weight of pilot ultra low sulfur distillate oil having a sulfur content of no more than 0.0015% by weight.

KEY:

EU# = Emission Unit Number
MMBtu/hr = 1,000,000 British thermal units per hour
NO_X = Oxides of Nitrogen
% = percent
O_2 = Oxygen
< = less than
$\leq$ = less than or equal to
$\geq$ = equal to or greater than

D. RACT STRATEGY

EU Nos. 1, 7, 8, and 10 have each operated less than 1,000 hours during every consecutive twelve month period since January 1, 1990 and therefore shall maintain continuous compliance with NO_X RACT by complying with 310 CMR 7.19(8)(d). Should any of these four

EUs exceed 1,000 hours during any consecutive twelve month period, then said EU(s) shall become subject to and shall comply with 310 CMR 7.19(8)(c)3.

EU Nos. 6, 11, and 12 have operated 1,000 hours or more during any consecutive twelve month period since January 1, 1990, and have demonstrated, via emissions compliance stack testing, compliance with the applicable NO_X emission standard of 9.0 grams per brake horsepower hour when firing in both Diesel and Dual Fuel modes and as such shall maintain continuous compliance with NO_X RACT by complying with 7.19(8)(c)3 when operating in both Diesel and Dual Fuel modes.

EU2 and EU9 have operated 1,000 hours or more during any consecutive twelve month period since January 1, 1990, and have demonstrated, via emissions compliance stack testing, compliance with the applicable NO_X emission standard of 9.0 grams per brake horsepower hour when operating in Dual Fuel mode and as such shall maintain continuous compliance with NO_X RACT, while operating in Dual Fuel mode, by complying with 7.19(8)(c)3.

Neither EU2 nor EU9 has demonstrated compliance with the applicable NO_X RACT emission standard of 9.0 grams per brake horsepower hour when operating in Diesel mode. As such, Ipswich shall comply with the applicable NO_X RACT emission standard of 9.0 grams per brake horsepower hour for EU2 and EU9 when operating in ULSD Diesel mode, by utilizing NO_X ERCs as per 310 CMR 7.19(2)(g), which are certified by MassDEP pursuant to 310 CMR 7.00: Appendix B(3) and as calculated according to Section H below. In order to comply with the applicable NO_X RACT emission standard, Ipswich shall obtain and use (retire) NO_X ERCs as provided in 310 CMR 7.00: Appendix B(3) to offset all actual emissions of NO_X, in excess of the applicable emission standard contained in 310 CMR 7.19(8)(c)3, from EU2 and from EU9, each while operating in ULSD Diesel mode. Said purchase, usage and retirement of any and all required ERCs shall be completed on a calendar year basis on or before every January 30 of the following year.

MassDEP has determined that the subject ECP is administratively complete and that it is in conformance with current air pollution control engineering practice. Therefore, MassDEP hereby grants **APPROVAL** for the subject ECP, as submitted, with the following conditions:

E. NO_X and CO EMISSION LIMITATIONS

I. Ipswich shall comply with the restrictions and emissions limitations/standards contained in Table 2 below, which includes a list of each operational NO_X RACT subject stationary RICE at Ipswich, along with its operating mode, the applicable restrictions and emission limitations/standards, and its RACT compliance strategy reference:

TABLE 2					
NO_X RACT APPLICABILITY AND COMPLIANCE STRATEGY					
EU#	ALLOWABLE FUEL	RESTRICTIONS	POLLUTANT	NO_X RACT REQUIREMENT(S)	APPLICABLE NO_X RACT COMPLIANCE STRATEGY
EU1, EU7, EU8, EU10	ULSD Diesel mode[1]	<1000 hours of operation during any consecutive twelve (12) month period, each unit	CO	Set and maintain the ignition timing of the engine 4 degrees retarded relative to standard timing; provided the ignition timing shall not be retarded beyond the point that: a) CO emissions concentration increases by 100 ppmvd @ 15% O_2 [3] **or** b) the turbocharger (as applicable) speed is increased beyond the maximum operating speed recommended by the manufacture, **or** c) the exhaust port temperature increases beyond the manufacturer's recommended maximum operating temperature	310 CMR 7.19(8)(d)1.a.
		≥ 1000 hours of operation during any consecutive twelve (12) month period, each unit	NO_X	≤ 9.0 grams per brake horsepower-hour	310 CMR 7.19(8)(c)3

TABLE 2					
NO_X RACT APPLICABILITY AND COMPLIANCE STRATEGY					
EU#	ALLOWABLE FUEL	RESTRICTIONS	POLLUTANT	NO_X RACT REQUIREMENT(S)	APPLICABLE NO_X RACT COMPLIANCE STRATEGY
EU1, EU10	Dual Fuel mode[2]	<1000 hours of operation during any consecutive twelve (12) month period, each unit	CO	Set and maintain the ignition timing of the engine 4 degrees retarded relative to standard timing; provided the ignition timing shall not be retarded beyond the point that: a) CO emissions concentration increases by 100 ppmvd @ 15% O_2 [3] **or** b) the turbocharger speed is increased beyond the maximum operating speed recommended by the manufacture, **or** c) the exhaust port temperature increases beyond the manufacturer's recommended maximum operating temperature	310 CMR 7.19(8)(d)1.a.
		≥ 1000 hours of operation during any consecutive twelve (12) month period, each unit	NO_X	≤ 9.0 grams per brake horsepower-hour[6]	310 CMR 7.19(8)(c)3

TABLE 2					
NO_X RACT APPLICABILITY AND COMPLIANCE STRATEGY					
EU#	ALLOWABLE FUEL	RESTRICTIONS	POLLUTANT	NO_X RACT REQUIREMENT(S)	APPLICABLE NO_X RACT COMPLIANCE STRATEGY
EU2, EU6, EU9, EU11, EU12	Dual Fuel mode[2]	N/A	NO_X	$\leq$ 9.0 grams per brake horsepower-hour[6]	310 CMR 7.19(8)(c)3
EU6, EU11, EU12	ULSD Diesel mode[1]				
EU2, EU9	ULSD Diesel mode[1]	Ipswich shall obtain and use (retire) NO_X ERCs[4] on an annual basis to offset all actual emissions of NO_X in excess of the applicable NO_X emission standard at 310 CMR 7.19(8)(c)3[5]	NO_X	$\leq$ 9.0 grams per brake horsepower-hour[6]	310 CMR 7.19(8)(c)3 and 310 CMR 7.19(2)(g)

NOTES:

1: ULSD Diesel mode: consisting of 100 percent ultra low sulfur distillate (ULSD) fuel firing, having a sulfur content of no more than 0.0015% by weight

2: Dual Fuel mode: consisting of a mixture of natural gas together with a maximum of 6 percent by weight of pilot ultra low sulfur distillate oil having a sulfur content of no more than 0.0015% by weight

3: ppmvd @ 15% O_2 = parts per million by volume, dry basis, corrected to fifteen (15) percent oxygen.

4: ERC = Emission Reduction Credits (ERCs), as per 310 CMR 7.19(2)(g)

5: Quantity of ERCs required to be obtained and used (retired) by Ipswich on a yearly basis shall be calculated as described below

6: Based on a one- hour average

KEY:

EU# = Emission Unit Number
CO = Carbon monoxide
NO_X = Oxides of Nitrogen
% = percent
O_2 = Oxygen
< = less than
$\leq$ = less than or equal to
$\geq$ = equal to or greater than

F. SULFUR IN FUEL LIMITATION

I. Ipswich shall comply with the sulfur in fuel limitations contained in Table 3 below:

TABLE 3		
SULFUR IN FUEL LIMITATIONS		
EU#	ALLOWABLE FUELS	LIMITATION
EU7, EU8	ULSD Diesel mode[1]	Ipswich shall ensure that all diesel fuel oil burned in the subject engines is Ultra Low Sulfur Distillate (ULSD), having a **sulfur content of no more than 0.0015% by weight.**
EU1, EU2, EU6, EU9, EU10, EU11, EU12	ULSD Diesel mode[1], Dual Fuel mode[2]	

NOTES:

1: ULSD Diesel mode: consisting of 100 percent ultra low sulfur distillate (ULSD) fuel firing, having a sulfur content of no more than 0.0015% by weight

2: Dual Fuel mode: consisting of a mixture of natural gas together with a maximum of 6 percent by weight of pilot ultra low sulfur distillate oil having a sulfur content of no more than 0.0015% by weight

KEY:

EU# = Emission Unit Number % = percent

G. OPACITY LIMITATIONS

I. Ipswich shall comply with the opacity limitations contained in Table 4 below:

TABLE 4		
OPACITY LIMITATIONS		
EU#	ALLOWABLE FUELS	RESTRICTIONS
EU7, EU8	ULSD Diesel mode[1]	Ipswich shall ensure that opacity from each EU shall not exceed 10% at any time
EU1, EU2, EU6, EU9, EU10, EU11, EU12	ULSD Diesel mode[1], Dual Fuel mode[2]	

NOTES:

1: ULSD Diesel mode: consisting of 100 percent ultra low sulfur distillate (ULSD) fuel firing, having a sulfur content of no more than 0.0015% by weight

2: Dual Fuel mode: consisting of a mixture of natural gas together with a maximum of 6 percent by weight of pilot ultra low sulfur distillate oil having a sulfur content of no more than 0.0015% by weight

KEY: EU# = Emission Unit Number % = percent

H. MONITORING AND TESTING REQUIREMENTS

I. Ipswich shall comply with the monitoring and testing requirements contained in Table 5 below:

TABLE 5	
EU#	MONITORING AND TESTING REQUIREMENTS
EU1, EU7, EU8, EU10	1. At least once every three years Ipswich shall inspect and maintain the ignition timing for each of these four engines to a condition of four degrees retarded relative to standard timing, in accordance with the procedure contained in Regulation 310 CMR 7.19(8)(d) provided the ignition timing shall not be retarded beyond the point that: a. the CO emission concentration increases beyond 100 parts per million (ppm) by volume, dry, corrected to 15% O_2, or b. the turbocharger speed is increased beyond the maximum operating speed recommended by the manufacturer, or c. the exhaust port temperature increases beyond the manufacturer's recommended maximum operating temperature.
	2. Determine the hours of operation for each engine for the previous twelve month period on a monthly basis by maintaining an elapsed time meter on each of the four subject engines to indicate, in cumulative hours, the elapsed engine operating time of each of the four subject engines for the previous twelve months as provided in 310 CMR 7.19(8)(d).
	3. Prior to operating any of the four subject engines over 1,000 hours in any consecutive twelve month period, perform Emission Compliance Testing (stack testing) to demonstrate the ability of the unit to meet the applicable NO_X RACT emission standard of 9.0 grams per brake horsepower hour in both ULSD Diesel and Dual Fuel, as applicable, modes as provided in 310 CMR 7.19(13)(c). Said stack testing shall be conducted in accordance with the EPA test methodologies set forth in Code of Federal Regulations Title 40 CFR Part 60, Appendix A or other methods approved by MassDEP and EPA as provided in 310 CMR 7.19(13)(c)3.
	4. Construct appropriate testing ports if it is anticipated that any of the four (4) engines could possibly exceed 1,000 hours of operation in any consecutive twelve month period. These testing ports shall be constructed so as to accommodate the emissions testing requirements as stipulated in Code of Federal Regulations Title 40 CFR Part 60, Appendix A or other method approved by MassDEP and EPA.

<table>
<tr><th colspan="2">TABLE 5</th></tr>
<tr><th>EU#</th><th>MONITORING AND TESTING REQUIREMENTS</th></tr>
<tr><td rowspan="2">EU2</td><td>5. Ipswich shall monitor by calculating on a monthly basis the quantity of ERCs necessary to be obtained and used (retired) for EU2 to comply with the applicable NO_X RACT emission limit of 9.0 grams per brake horsepower hour, when operating in ULSD Diesel mode, according to the following formula:
$ERC_{NOx/month} = [(AcE_{NOx})(MMBtu_{month}) - (AlE_{NOx})(MMBtu_{month})]$
where:
$ERC_{NOx/month}$= federally enforceable NO_X Emission Reduction Credits required to be obtained and used (retired) for EU2 compliance with NO_X RACT in pounds per month, certified by MassDEP under 310 CMR 7.00: Appendix B(3)

AcE_{NOx} = the actual NO_X emissions of 3.01 pounds per MMBtu input for EU2 firing in ULSD Diesel mode (based on emissions compliance testing performed on July 13 and 14, 1995)

AlE_{NOx} = the allowable NO_X emissions equivalent of 2.31 pounds per MMBtu, on an input basis, of the applicable NO_X RACT emission standard of 9.0 grams per brake horsepower hour

$MMBtu_{month}$ = the quantity of million British thermal units per hour (MMBtu) fired in EU2 per month</td></tr>
<tr><td>6. The amount of monthly ERCs calculated by the above formula for EU2 shall be summed, from January through December of each year, to arrive at a yearly ERC value needed for EU2 NO_X RACT compliance. Ipswich shall comply with 310 CMR 7.00: Appendix B(3)(e) regarding the withdrawal, transfer, and use of ERCs. In accordance with 310 CMR 7.00: Appendix B(3)(e)2., Ipswich shall obtain an amount of credit equal to five (5) percent more than the amount needed for compliance calculation. Therefore, the amount of ERCs required to be obtained and used (retired) shall be calculated according to the following formula and rounded to the nearest whole number:

$ERC_{NOx/year} = \sum_{Jan}^{Dec} ERC_{NOx/month} * (1.05)$

Ipswich shall calculate and monitor the total amounts of ozone season (May 1 through September 30) and non-ozone season (October 1 through April 30) ERCs that are necessary for EU2 compliance with NO_X RACT, and obtain and use (or retire) ERCs in accordance with the provisions of 310 CMR 7.00: Appendix B(3)(e)8. In accordance with 310 CMR 7.00: Appendix B(3)(e)8, NO_X ERCs generated during the ozone control period of May 1 through September 30 can be used for compliance at any time during the year. However, NO_X ERCs generated during the non-ozone control period of October 1 through April 30 shall only be used for compliance in the same season as generated (October 1 through April 30).</td></tr>
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TABLE 5	
EU#	MONITORING AND TESTING REQUIREMENTS
EU9	7. Ipswich shall monitor by calculating on a monthly basis the amount of ERCs necessary to be obtained and used (retired) for EU9 to comply with the applicable NO_X RACT emission limit of 9.0 grams per brake horsepower hour, when operating in ULSD Diesel mode, according to the following formula: $ERC_{NOx/month} = [(AcE_{NOx})(MMBtu_{month}) - (AlE_{NOx})(MMBtu_{month})]$ where: $ERC_{NOx/month}$= federally enforceable NO_X Emission Reduction Credits required to be obtained and used (retired) for EU9 compliance with NO_X RACT in pounds per month, certified by MassDEP under 310 CMR 7.00: Appendix B(3) AcE_{NOx} = the actual NO_X emissions of 2.65 pounds per MMBtu input for EU9 firing in ULSD Diesel mode (based on emissions compliance testing performed on July 13 and 14, 1995) AlE_{NOx} = the allowable NO_X emissions equivalent of 2.31 pounds per MMBtu, on an input basis, of the applicable NO_X RACT emission standard of 9.0 grams per brake horsepower hour $MMBtu_{month}$ = the quantity of million British thermal units per hour (MMBtu) fired in EU9 per month
	8. The amount of monthly ERCs calculated by the above formula for EU9 shall be summed, from January through December of each year, to arrive at a yearly ERC value needed for EU9 NO_X RACT compliance. Ipswich shall comply with 310 CMR 7.00: Appendix B(3)(e) regarding the withdrawal, transfer, and use of ERCs. In accordance with 310 CMR 7.00: Appendix B(3)(e)2., Ipswich shall obtain an amount of credit equal to five (5) percent more than the amount needed for compliance calculation. Therefore, the amount of ERCs required to be obtained and used (retired) per calendar year shall be calculated according to the following formula and rounded to the nearest whole number: $ERC_{NOx/year} = \sum_{Jan}^{Dec} ERC_{NOx/month} * (1.05)$ Ipswich shall calculate and monitor the total amounts of ozone season (May 1 through September 30) and non-ozone season (October 1 through April 30) ERCs that are necessary for EU9 compliance with NO_X RACT, and obtain and use (or retire) ERCs in accordance with the provisions of 310 CMR 7.00: Appendix B(3)(e)8. In accordance with 310 CMR 7.00: Appendix B(3)(e)8, NO_X ERCs generated during the ozone control period of May 1 through September 30 can be used for compliance at any time during the year. However, NO_X ERCs generated during the non-ozone control period of October 1 through April 30 shall only be used for compliance in the same season as generated (October 1 through April 30).

TABLE 5	
EU#	MONITORING AND TESTING REQUIREMENTS
EU2, EU9	9. Monitor to ensure compliance with 310 CMR 7.19(2)(g) by obtaining and using (retiring) sufficient ERCs, as necessary for compliance, on or before January 30th of each year.
EU1, EU2, EU6, EU7, EU8, EU9, EU10, EU11, EU12	10. Submit a pretest protocol to this Office, attention BWP Permit Chief, at least 60 days prior to the anticipated date of any required stack test, for review and written approval as provided in 310 CMR 7.19(13)(c)1. Include a description of sampling point locations, sampling equipment, sampling and analytical procedures, and the operating conditions for the required testing in the pretest protocol as provided in 310 CMR 7.19(13)(c)2.
	11. All emissions testing if and when requested by MassDEP or EPA, shall be conducted in accordance with the EPA Reference Test Methods, which are found in 40 CFR 60, Appendix A. All testing must also be conducted by the methods outlined in 310 CMR 7.13(1)(a) - (d) and as required by MassDEP.
	12. For each emission unit, measure on a daily basis: a) the quantity and type of fuel(s) burned each day, b) heat content of each fuel, c) the total heating value of the fuel consumed for each day, and d) the allowable emission rate as provided in 310 CMR 7.19(13)(d)3.
	13. Monitor the sulfur content of each new shipment of ULSD fuel oil received. Compliance with the sulfur content limitation can be demonstrated through testing or maintaining a shipping receipt from the fuel supplier. The shipment certification or testing of sulfur content of ULSD fuel oil shall be in accordance with the applicable American Society for Testing Materials (ASTM) test methods or any other method approved by MassDEP and EPA.
	14. Opacity shall be determined in accordance with EPA Test Method 9, as specified in 40 CFR 60, Appendix A, if and when requested by MassDEP or EPA.

I. RECORD KEEPING REQUIREMENTS

I. Ipswich shall comply with the record keeping requirements contained in Table 6 below:

TABLE 6	
EU #	RECORD KEEPING REQUIREMENTS
EU1, EU7, EU8, EU10	1. Maintain records of the cumulative hours of operation of each of the four (4) subject engines on both a monthly basis as well as for each twelve month consecutive period on site, for a period of the five most recent years.

TABLE 6	
EU #	RECORD KEEPING REQUIREMENTS
EU1, EU7, EU8, EU10	2. Maintain on site, for a period of the five most recent years, records to certify that the ignition timing of each of the four (4) subject engines has been inspected and adjusted at least once every three (3) years as provided in 310 CMR 7.19(8)(d)5.
EU2, EU9	3. On both a monthly and calendar year basis calculate and record the allowable NO_X emissions (AlE_{NOX}) from each EU, in pounds, based on the applicable NO_X RACT emission standard of 9.0 grams per brake horsepower hour. In addition, Ipswich shall determine and record on a monthly and calendar year basis, in pounds, the actual NO_X emissions (AcE_{NOx}) from each EU and the difference between actual and allowable NO_X emissions for each EU.
	4. Record, if necessary, the quantity of NO_X Emission Reduction Credits (ERC_{NOx}), in pounds per month and pounds per calendar year, required to comply with NO_X RACT. Said ERC records shall contain the total amounts of ozone season (May 1 through September 30) and non-ozone season (October 1 through April 30) ERCs that were required to be obtained and used (retired) for compliance with NO_X RACT on a calendar year basis.
	5. Maintain records that identify the source of any ERCs obtained, including company name, emission unit and method of generation, date of generation, the Transmittal Number of the Application for certification of ERCs and the date of retirement of said ERCs.
EU1, EU2, EU6, EU7, EU8, EU9, EU10, EU11, EU12	6. Maintain records of the results of any Emissions Compliance Testing (Stack Testing) so that a summary may be reported to MassDEP as required by 310 CMR 7.13(1)(d).
	7. For each emission unit maintain on site, for a period of the five most recent years, records of the types of fuel(s) burned each day, quantity of each type of fuel burned, heat content of each fuel, the total heating value of the fuel consumed for each day, and the allowable emission rate as provided in 310 CMR 7.19(13)(d)3.
	8. Maintain fuel purchase records in order to demonstrate compliance with the fuel sulfur content limitations in this Approval. Maintain all records and copies of fuel supplier certifications or fuel oil analyses on site for a period of five (5) years. The records shall be submitted to MassDEP within ten (10) days of request by MassDEP or EPA.
	9. Maintain a record of all EPA Test Method 9 opacity determinations including the date, the name of the Method 9 certified observer, and the determinations made.
	10. Maintain on-site a copy of the Standard Operating and Maintenance Procedure (SOMP) for the facility.

J. REPORTING REQUIREMENTS

I. Ipswich shall comply with the reporting requirements contained in Table 7 below:

TABLE 7	
EU #	REPORTING REQUIREMENTS
EU1, EU7, EU8, EU10	1. Submit a pretest protocol to this Office, attention BWP Permit Chief, at least 60 days prior to the anticipated date of any required stack test, for review and written approval as provided in 310 CMR 7.19(13)(c)1. Include a description of sampling point locations, sampling equipment, sampling and analytical procedures, and the operating conditions for the required testing in the pretest protocol as provided in 310 CMR 7.19(13)(c)2.
	2. A compliance test results report shall be submitted to MassDEP, attention BWP Permit Chief, no later than 60 days after the completion of the stack test and before any of the four (4) subject engines has exceeded 1,000 hours of operation in any consecutive twelve (12) months.
	3. In accordance with 310 CMR 7.19(8)(d)4., notify MassDEP if the operation of any of the four (4) subject engines exceeds 1,000 hours for any consecutive twelve month period within three (3) business days.
EU2, EU9	4. Submit in writing to MassDEP, by February 15th of each year, a summary showing the following for each of the subject engines: a) monthly actual emissions for the previous year, b) monthly allowable emissions for the previous year, c) the previous year's actual emissions, d) the previous year's allowable emissions, e) quantity of ERCs required to be obtained and used (retired) per year including a breakdown of the ozone season and non- ozone season ERCs, f) quantity of ERCs obtained and used (retired), g) source of the ERCs obtained and used (retired), including facility name, emission unit and method of generation, and the transmittal number for the Application for certification of ERCs, and h) The date that the required ERCs were obtained and used (retired).
EU1, EU2, EU6, EU7, EU8, EU9, EU10, EU11, EU12	5. Submit the emission test report to this Office, attention BWP Permit Chief, for review and written MassDEP approval within 60 days of the completion of the compliance stack testing as provided in 310 CMR 7.19(13)(c)6.
	6. In accordance with 310 CMR 7.19(13)(d)9, submit compliance records within ten (10) days of written request by MassDEP or EPA.

K. CONTINUOUS EMISSIONS MONITORING REQUIREMENTS

Not Applicable

L. SPECIAL CONDITIONS

I. This Final Modified NO_X RACT ECP Approval No. MBR-11-ECP-001 supersedes Approval No. MBR-94-COM-040, issued May 31, 1995, in its entirety.

II. Within sixty (60) days of receipt of this Approval letter Ipswich shall obtain, from the current owner of approved NO_X ERC that have not been previously converted or retired, and hold at a minimum 1 ton of ozone-season NO_X Emission Reduction Credits (ERC).

III. Within fourteen (14) days of the purchase of the ozone-season NO_X ERC(s) required above, Ipswich shall provide MassDEP with written confirmation that said purchase has occurred. Said written confirmation must show the original transmittal and approval number under which the ozone-season NO_X ERC generation was approved.

IV. The purchase and retirement of all required ERC(s) shall be completed on a calendar year basis on or before every January 30 of the following year.

V. The routine monitoring of generator station power production performed for NEPOOL shall serve as backup documentation of engine usage. This information shall be used to verify the elapsed timer meter readings, and shall also provide a backup method for estimating the duration of engine usage for any periods when the elapsed timer may be out-of-service.

VI. Should EU1, EU7, EU8 or EU10 operate 1,000 hours or more individually during any consecutive twelve month period, then said EU shall become subject to and shall comply with 310 CMR 7.19(8)(c)3.

VII. Ipswich shall comply with all applicable requirements contained in federal regulation 40 CFR Part 63 Subpart ZZZZ, “National Emission Standards for Hazardous Air Pollutants for Stationary Reciprocating Internal Combustion Engines”.

VIII. That Ipswich shall maintain a copy of the Standard Operating and Maintenance Procedures (SOMP) for the NO_X RACT subject combustion units on-site at all times. Updated versions of the SOMP shall be submitted to MassDEP. MassDEP must approve of significant changes to the SOMP prior to the change becoming effective. The updated SOMP shall supersede prior versions of the SOMP.

M. GENERAL CONDITIONS

I. Ipswich shall maintain continuous compliance at all times with the terms of this ECP Approval.

II. This Approval may be suspended, modified, or revoked by MassDEP if at any time Ipswich is violating any applicable Regulation(s) or condition(s) of this Approval letter.

III. The subject ECP Approval consists of the Application materials and this Approval letter. If conflicting information is found between these two documents, then the requirements of the Approval letter shall take precedence over the documentation in the Application materials.

IV. That should any nuisance condition(s) occur as a result of the operation of the subject facility, then Ipswich shall immediately take appropriate steps to abate said nuisance conditions(s).

V. MassDEP has determined that the filing of an Environmental Notification Form (ENF) with the Secretary of Energy & Environmental Affairs, for air quality control purposes, is not required prior to this action by MassDEP. Notwithstanding this determination, the Massachusetts Environmental Policy Act (MEPA) and Regulation 301 CMR 11.00 Section 11.04, provide certain "Fail Safe Provisions" which allow the Secretary to require the filing of an ENF and/or Environmental Impact Report at a later time.

VI. That this Approval does not negate the responsibility of Ipswich to comply with this or any other applicable federal, state, or local regulations now or in the future. Nor does this Approval imply compliance with any other applicable federal, state, or local regulations now or in the future.

N. APPEAL PROCESS

This Approval is an action of MassDEP. If you are aggrieved by this action, you may request an adjudicatory hearing. A request for a hearing must be made in writing and postmarked within twenty-one (21) days of the date of issuance of this Approval.

Under 310 CMR 1.01(6)(b), the request must state clearly and concisely the facts which are the grounds for the request, and the relief sought. Additionally, the request must state why the Approval is not consistent with the applicable laws and regulations.

The hearing request along with a valid check payable to the Commonwealth of Massachusetts in the amount of one hundred dollars ($100.00) must be mailed to:

Commonwealth of Massachusetts
Department of Environmental Protection (MassDEP)
P.O. Box 4062
Boston, Massachusetts 02211

The request will be dismissed if the filing fee is not paid unless the appellant is exempt or granted a waiver as described below.

The filing fee is not required if the appellant is a city or town (or municipal agency), county, or district of the Commonwealth of Massachusetts, or a municipal housing authority.

MassDEP may waive the adjudicatory hearing-filing fee for a person who shows that paying the fee will create an undue financial hardship. A person seeking a waiver must file, together with the hearing request as provided above, an affidavit setting forth the facts believed to support the claim of undue financial hardship.

Should you have any questions concerning this matter, please contact Susan McConnell in writing at the Metropolitan Boston/Northeast Regional Office, 205B Lowell Street, Wilmington, MA 01887, or by telephone at (978) 694-3292.

Sincerely,

This final document copy is being provided to you electronically by the Department of Environmental Protection. A signed copy of this document is on file at the DEP office listed on the letterhead.

Susan McConnell
Environmental Engineer

James E. Belsky
Regional Permit Chief
Bureau of Waste Prevention

copy: Board of Health, Ipswich
Fire Headquarters, Ipswich
City Hall, Ipswich
Merrimack Valley Planning Commission, 160 Main Street, Haverhill, MA 01830
Mr. Stephen Slocomb, Epsilon Associates, Inc.,3 Clock Tower Place, Suite 250, Maynard, MA 01754
DEP/NERO – Marc Altobelli, Mary Persky, Susan McConnell
DEP/Boston - Yi Tian (E-Copy)